

ISSN 0300-9246

JOURNAL OF THE CHEMICAL SOCIETY

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# Dalton Transactions

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A journal of inorganic chemistry

1990



ROYAL SOCIETY OF CHEMISTRY

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Printed in England by Clays Ltd, St Ives plc

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- centre; X-ray crystal structures of the phosphido bridged complexes  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-H})(\mu\text{-PEt}_2)(\text{CO})_6(\text{PEt}_2\text{H})(\eta\text{-C}_5\text{H}_5)]\cdot\text{Et}_2\text{O}$ ,  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-PPH}_2)(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]\cdot 0.5\text{CH}_2\text{Cl}_2$ ,  $[\text{WFe}_2(\mu_3\text{-OCCH}_2\text{R})(\mu\text{-PPH}_2)(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]$ , and  $[\text{WFe}_2(\mu\text{-OCCH}_2\text{R})(\mu\text{-PPH}_2)(\text{CO})_6(\text{PPH}_2\text{H})(\eta\text{-C}_5\text{H}_5)]\cdot\text{CH}_2\text{Cl}_2$  ( $\text{R} = \text{C}_6\text{H}_4\text{Me-4}$ ), 1063–76
- Synthesis and reactions of co-ordinatively unsaturated  $\mu_3$ -alkylidyne clusters; X-ray crystal structures of the phosphido bridged complexes  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-H})(\mu\text{-PPH}_2)(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]$  and  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-C}(\text{O})\text{C}(\text{Me})\text{CHMe})(\mu\text{-PEt}_2)(\text{CO})_5(\eta\text{-C}_5\text{H}_5)]$  ( $\text{R} = \text{C}_6\text{H}_4\text{Me-4}$ ), 1589–96
- Reactions of the co-ordinatively unsaturated  $\mu_3$ -alkylidyne cluster  $[\text{WFe}_2(\mu_3\text{-CC}_6\text{H}_4\text{Me-4})(\mu\text{-H})(\mu\text{-PPH}_2)(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]$  with  $\text{PMe}_2\text{Ph}$ , 2063–8
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 98. Tri- and tetra-nuclear metal compounds with ethylidyne or *p*-tolylmethylidyne groups, and having both cyclopentadienyl and carborane ligands, 2239–46
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 99. Synthesis of the cluster compounds  $[\text{MoCoAu}(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\mu_3\text{-CR})(\text{CO})_4(\eta\text{-C}_5\text{H}_5)(\eta\text{-C}_5\text{Me}_2)(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)]$  ( $\text{M} = \text{Mo}$  or  $\text{W}$ ,  $\text{R} = \text{C}_6\text{H}_4\text{Me-4}$ ;  $\text{M} = \text{W}$ ,  $\text{R} = \text{Me}$ ); crystal structure of the complex  $[\text{MoWCoAu}(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\mu_3\text{-CC}_6\text{H}_4\text{Me-4})(\text{CO})_4(\eta\text{-C}_5\text{H}_5)(\eta\text{-C}_5\text{Me}_2)(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)]\cdot\text{CH}_2\text{Cl}_2$ , 2247–52
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 100. Synthesis of mixed-metal compounds via the salts  $[\text{NET}_4][\text{Rh}(\text{CO})\text{L}(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{R}_2)]$  ( $\text{L} = \text{PPh}_3$ ,  $\text{R} = \text{H}$ ;  $\text{L} = \text{CO}$ ,  $\text{R} = \text{Me}$ ); crystal structures of the complexes  $[\text{WRhAu}(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\text{CO})_3(\text{PPh}_3)(\eta\text{-C}_5\text{H}_5)(\eta^5\text{-C}_2\text{B}_9\text{H}_9)]$  and  $[\text{WRh}_2\text{Au}_2(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\text{CO})_6(\eta\text{-C}_5\text{H}_5)(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)]\cdot 0.5\text{CH}_2\text{Cl}_2$ , 2253–62
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 101. Synthesis of the compounds  $[\text{WPt}(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\mu\text{-}\sigma\text{-}\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)(\text{CO})_2(\text{PMe}_2\text{Ph})_2]$  ( $x = 5$ ,  $n = 9$ ;  $x = 6$ ,  $n = 10$ ); crystal structures of an isomer of each complex, 2617–24
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 102. Alkylidyne ligand migration from manganese to a rhodacarborane cluster; crystal structure of  $[\text{Rh}(\sigma\text{-}\eta^5\text{-CH}(\text{C}_6\text{H}_4\text{Me-4})\text{C}_2\text{B}_9\text{H}_{10})(\text{CO})(\text{PPh}_3)]$ , 2625–32
- Reaction of polynuclear acetylide clusters, synthesis of pentanuclear heterometallic clusters by addition of  $[\text{M}(\text{CO})_3(\text{C}\equiv\text{CPh})(\eta\text{-C}_5\text{H}_5)]$  to  $[\text{MoOs}(\text{CO})_4(\text{C}\equiv\text{CPh})(\eta\text{-C}_5\text{H}_5)]$  ( $\text{M} = \text{Mo}$  or  $\text{W}$ ). Crystal structures of  $[\text{Mo}_2\text{Os}_2(\text{CO})_{11}(\text{CCPhCCPh})(\eta\text{-C}_5\text{H}_5)_2]\cdot 2\text{H}_2\text{O}$  and  $[\text{MoWOs}_2(\text{CO})_9(\mu_4\text{-C})(\mu_3\text{-CPh})(\text{CCPh})(\eta\text{-C}_5\text{H}_5)_2]\cdot\text{CH}_2\text{Cl}_2$ , 3025–32
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- Octahedral alkylidyne complexes of tungsten with chelating ligands as precursors for polynuclear compounds. Crystal structures of  $[\text{W}(\text{=CR})(\text{CO})_2(\text{dmpe})(\text{NCS})]$  and  $[\text{Co}_2\text{W}(\mu_3\text{-CR})(\text{CO})_6(\text{dmpe})\text{Br}]$  ( $\text{R} = \text{C}_6\text{H}_4\text{Me-4}$ ,  $\text{dmpe} = \text{Me}_2\text{PCH}_2\text{CH}_2\text{PMe}_2$ ), 3355–62
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 103. Carborane molybdenum and tungsten dimetal complexes, 3481–8
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 104. Trimetal molybdenum and tungsten complexes containing  $\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{R}'_2$  ( $\text{R}' = \text{H}$  or  $\text{Me}$ ) ligands; crystal structure of  $[\text{NEt}_4][\text{Mo}_2\text{W}(\mu_3\text{-CC}_6\text{H}_4\text{Me-4})(\mu\text{-CO})(\text{CO})_7(\text{PMe}_3)(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)]$ , 3489–98
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 105. Alkylidyne tungsten and molybdenum complexes with pyrazolylmethane ligands, 3499–506
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 106. Synthesis and reactions of the alkylidyne complexes  $[\text{M}(\text{=CR})(\text{CO})_2(\text{C}_6\text{F}_5)\text{AuC}(\text{pz})_3]$  ( $\text{M} = \text{W}$  or  $\text{Mo}$ ,  $\text{R} = \text{alkyl}$  or  $\text{aryl}$ ,  $\text{pz} = \text{pyrazol-1-yl}$ ); crystal structure of  $[\text{WPtAu}(\text{C}_6\text{F}_5)(\mu_3\text{-CMe})(\text{CO})_2(\text{PMe}_2\text{Ph})_2(\text{C}_6\text{F}_5)\text{AuC}(\text{pz})_3]$ , 3701–8
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 107. Reactions of diphenylphosphine with molybdenumtungsten dimetal complexes; crystal structures of  $[\text{MoW}(\mu\text{-PPH}_2)(\mu\text{-C}(\text{OH})(\text{C}_6\text{H}_4\text{Me-4}))(\text{CO})(\eta^5\text{-C}_7\text{H}_7)(\eta^5\text{-C}_2\text{B}_9\text{H}_{11})]$  and  $[\text{MoW}(\mu\text{-PPH}_2)(\text{CO})_3(\eta^5\text{-C}_9\text{H}_7)(\eta^5\text{-C}_2\text{B}_9\text{H}_9)(\text{CH}_2\text{C}_6\text{H}_4\text{Me-4})\text{Me}_2]$ , 3709–18

**ALKYNE**

- Heteronuclear transition metal-alkyne clusters. Part 2. Formation of trinuclear clusters *via* reactions of

- $[\text{W}(\text{CO})(\text{R}^1\text{C}_2\text{R}^2)(\text{S}_2\text{CNR}_2)_2]$  ( $\text{R}^1 = \text{R}^2 = \text{Ph}$  or  $\text{H}$ ,  $\text{R} = \text{Me}$  or  $\text{Et}$ ;  $\text{R}^1 = \text{R}^2 = \text{R} = \text{Me}$ ;  $\text{R}^1 = \text{Ph}$ ,  $\text{R}^2 = \text{H}$ ,  $\text{R} = \text{Et}$ ) with octacarbonyldicobalt. X-Ray crystal structure of  $[\text{WCo}_2(\mu\text{-S})(\mu\text{-SCNEt}_2)(\text{CO})_4(\text{C}_2\text{Ph}_2)(\text{S}_2\text{CNEt}_2)_2]$ , 567–72
- Organic chemistry of dinuclear metal centres. Part 14. Synthesis, X-ray structure, and reactivity of the ruthenium–ruthenium double-bonded complex  $[\text{Ru}_2(\mu\text{-CO})(\mu\text{-C}_2\text{Ph}_2)(\eta\text{-C}_5\text{H}_5)_2]$ , 761–72
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 97. Synthesis and crystal structures of the molybdenumtungsten compounds  $[\text{MoW}_2\{\mu\text{-}\sigma\text{-}\sigma':\eta^4\text{-C}(\text{Ph})\text{C}(\text{Ph})\text{C}(\text{C}_6\text{H}_4\text{Me-4})\text{C}(\text{C}_6\text{H}_4\text{Me-4})\}(\text{CO})_6(\eta\text{-C}_5\text{H}_5)_2]\cdot 2\text{CH}_2\text{Cl}_2$  and  $[\text{MoW}_2(\mu\text{-C}_2\text{Ph}_2)(\mu\text{-C}_6\text{H}_4\text{Me-4})](\text{CO})_4(\eta\text{-C}_5\text{H}_5)_2]\cdot 0.5\text{CH}_2\text{Cl}_2$ , 953–8
- Synthesis of a series of hexanuclear ruthenium carbido cluster alkynes under mild conditions; X-ray structure analyses of the complexes  $[\text{Ru}_6\text{C}(\text{CO})_3(\mu_3\text{-}\eta^2\text{-PhCCH})]$  and  $[\text{Ru}_6\text{C}(\text{CO})_{15}(\mu_3\text{-}\eta^2\text{-PhCCMe})]$ , 995–1000
- Reactions of the complexes  $[\text{W}_2(\text{CO})(\text{NCMe})(\eta^2\text{-RC}_2\text{R})_2]$  ( $\text{R} = \text{Me}$  or  $\text{Ph}$ ) with dithiocarbonates and related ligands; and the X-ray crystal structure of  $[\text{W}(\text{CO})(\text{S}_2\text{CNC}_4\text{H}_9)(\eta^2\text{-MeC}_2\text{Me}_2)]$ , 2535–42
- Formation of  $[\text{FeM}(\eta\text{-C}_5\text{H}_5)(\text{CO})_4(\mu\text{-CO})(\mu\text{-CR=CR'H})]$  ( $\text{M} = \text{Fe}$  or  $\text{Ru}$ ) complexes from the reaction of  $[\text{MH}(\eta\text{-C}_5\text{H}_5)(\text{CO})_2]$  with  $[\text{Fe}_2(\text{CO})_9]$  and acetylenes. X-Ray structure of  $[\text{FeRu}(\eta\text{-C}_5\text{H}_5)(\text{CO})_4(\mu\text{-CO})(\mu\text{-CPh=CPH})]$ , 3147–50
- Synthesis of the cationic bis(but-2-yne) complex  $[\text{W}(\text{CO})(\text{NCMe})(\text{S}_2\text{CNC}_4\text{H}_9)(\eta^2\text{-MeC}_2\text{Me}_2)]\text{BF}_4$  and its reactions with neutral bidentate donor ligands ( $\text{L-L}$ ) to give  $[\text{W}(\text{CO})(\text{S}_2\text{CNC}_4\text{H}_9)(\text{L-L})(\eta^2\text{-MeC}_2\text{Me}_2)]\text{BF}_4$ ; X-ray crystal structure determination of  $[\text{W}(\text{CO})(\text{S}_2\text{CNC}_4\text{H}_9)(\text{Ph}_2\text{PCH}_2\text{PPh}_2)(\eta^2\text{-MeC}_2\text{Me}_2)]\text{BF}_4$ , 3169–74
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 107. Reactions of diphenylphosphine with molybdenumtungsten dimetal complexes; crystal structures of  $[\text{MoW}(\mu\text{-PPH}_2)(\mu\text{-C}(\text{OH})(\text{C}_6\text{H}_4\text{Me-4}))(\text{CO})(\eta^5\text{-C}_7\text{H}_7)(\eta^5\text{-C}_2\text{B}_9\text{H}_{11})]$  and  $[\text{MoW}(\mu\text{-PPH}_2)(\text{CO})_3(\eta^5\text{-C}_9\text{H}_7)(\eta^5\text{-C}_2\text{B}_9\text{H}_9)(\text{CH}_2\text{C}_6\text{H}_4\text{Me-4})\text{Me}_2]$ , 3709–18

**ALKYNYL**

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- Chemistry of phosphido-bridged dimolybdenum complexes. Part 6. The insertion of allene into co-ordinated  $\mu$ -vinyl and  $\eta^3$ -allyl ligands; X-ray crystal structures of  $[\text{Mo}_2(\eta\text{-C}_5\text{H}_5)_2(\mu\text{-PMe}_2)](\eta^3\text{-CH}_2\text{C}(\text{CH}_3)\text{C}(\text{Me})=\text{CH}_2)(\text{CO})_2]$  and  $[\text{Mo}_2(\eta\text{-C}_5\text{H}_5)_2(\mu\text{-}\eta^5\text{-CH}_2\text{C}(\text{CH}_3)\text{C}(\text{Me})=\text{CH}_2)(\mu\text{-PMe}_2)(\text{CO})_2]$ , 2367–74

**ALLYL**

- Chemistry of phosphido-bridged dimolybdenum complexes. Part 4. Reactions of  $[\text{Mo}_2(\eta^5\text{-C}_5\text{H}_5)_2(\mu\text{-H})(\mu\text{-PR}_2)(\text{CO})_4]$  ( $\text{R} = \text{Ph}$  or  $\text{Me}$ ) with dienes, 155–60
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- Allylic alkylation of complexed cyclo-octatetraene (cot) *via* the reaction of  $[\text{Fe}(\text{P}(\text{OMe})_3)(\text{NO})_2(\eta^3\text{-allyl})]^+$  with  $[\text{M}(\text{CO})_3(\eta^4\text{-cot})]$  ( $\text{M} = \text{Fe}$  or  $\text{Ru}$ ) derivatives; X-ray structure of  $[\text{Ru}(\text{CO})_2(\text{PPh}_3)(\eta^2\text{-}\eta^3\text{-C}_8\text{H}_8\text{R})][\text{PF}_6]\cdot 0.5\text{CH}_2\text{Cl}_2$  [ $\text{R} = \text{CH}_2\text{C}(\text{Me})=\text{CH}_2$ ], 1291–300

- Selective C–O bond cleavage of allylic esters using  $[\text{MoH}_4(\text{Ph}_2\text{PCH}_2\text{CH}_2\text{PPh}_2)_2]$  under light irradiation to give hydridocarbonylato-molybdenum(II) complexes, 2407–12

**ALLYLATION**

- Allylic alkylation of complexed cyclo-octatetraene (cot) *via* the reaction of  $[\text{Fe}(\text{P}(\text{OMe})_3)(\text{NO})_2(\eta^3\text{-allyl})]^+$  with  $[\text{M}(\text{CO})_3(\eta^4\text{-cot})]$  ( $\text{M} = \text{Fe}$  or  $\text{Ru}$ ) derivatives; X-ray structure of  $[\text{Ru}(\text{CO})_2(\text{PPh}_3)(\eta^2\text{-}\eta^3\text{-C}_8\text{H}_8\text{R})][\text{PF}_6]\cdot 0.5\text{CH}_2\text{Cl}_2$  [ $\text{R} = \text{CH}_2\text{C}(\text{Me})=\text{CH}_2$ ], 1291–300

**ALLYLCYCLOPENTADIENYL**

- Reaction of  $[\text{Rh}(\eta^4\text{-cot})(\eta\text{-C}_5\text{H}_5)]$  (cot = cyclo-octatetraene) with  $[\text{Fe}(\text{P}(\text{OMe})_3)(\text{NO})_2(\eta^3\text{-CH}_2\text{CHCH}_2)]^+$ ; allylic alkylation of a cyclopentadienyl ring, 373–4

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- Oxidative addition of  $\text{I}_2$ ,  $\text{MeI}$ , and  $\text{CH}_3\text{I}_2$  to the naphthalene-1,8-diamide bridged complex  $[\text{Ir}_2(\mu\text{-1,8-(NH)}_2\text{C}_{10}\text{H}_6)(\text{CO})_2(\text{PPh}_3)_2]$ . X-Ray crystal structure of  $[\text{Ir}_2(\mu\text{-CH}_2)(\mu\text{-1,8-(NH)}_2\text{C}_{10}\text{H}_6)(\text{CO})_2(\text{PPh}_3)_2]\cdot\text{CH}_2\text{Cl}_2$ , 2587–92
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Iron-iridium mixed-metal carbonyl clusters. Part 2. Synthesis and chemical behaviour of the tetranuclear complexes

[FeIr<sub>3</sub>(CO)<sub>12</sub>]<sup>-</sup>, [Fe<sub>2</sub>Ir<sub>2</sub>(CO)<sub>12</sub>]<sup>2-</sup>, [Fe<sub>2</sub>Ir<sub>2</sub>H(CO)<sub>12</sub>]<sup>-</sup>, and [Fe<sub>3</sub>Ir(CO)<sub>13</sub>]<sup>-</sup>. Solid-state structures of [N(PPh<sub>3</sub>)<sub>2</sub>][FeIr<sub>3</sub>(CO)<sub>12</sub>], [NEt<sub>4</sub>][Fe<sub>2</sub>Ir<sub>2</sub>(CO)<sub>12</sub>], and [PPh<sub>4</sub>][Fe<sub>2</sub>Ir<sub>2</sub>(CO)<sub>12</sub>], 127-36

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- Studies on [Ru<sub>3</sub>(CO)<sub>12</sub>] catalysed homogeneous transfer hydrogenation reactions; *X*-ray structure of [Ru<sub>3</sub>(CO)<sub>10</sub>Cl<sub>2</sub>(OPh)<sub>2</sub>], 1305–12
- Modelling the reduction of nitrobenzene with [Ru<sub>3</sub>(CO)<sub>12</sub>] as a homogeneous catalyst. *X*-Ray structures of [Ru<sub>3</sub>H(CO)<sub>10</sub>(PhNH)] and [N(PPh<sub>3</sub>)<sub>2</sub>][Ru<sub>3</sub>H(CO)<sub>9</sub>(PhN)], 1313–22
- Crystallographic and molecular mechanics study of the copper perchlorate complex of a larger reinforced macrocycle, 1323–8
- cis*- and *trans*-Dichloro-derivatives of six- and seven-co-ordinate zirconium and hafnium bonded to quadridentate Schiff-base



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- ligands. Crystal structures of  $[\text{Zr}(\text{acen})\text{Cl}_2(\text{thf})]$ ,  $[\text{M}(\text{salphen})\text{Cl}_2(\text{thf})] \cdot 0.5\text{thf}$ ,  $[\text{M}(\text{acen})\text{Cl}_2]$  ( $\text{M} = \text{Zr}$  or  $\text{Hf}$ ), and  $[\text{Zr}(\text{msal})\text{Cl}_2]$  [acen = *N,N'*-ethylenebis(acetylacetonimine), salphen = *N,N'*-*o*-phenylenebis(salicylideneimine), msal = *N*-methylsalicylideneimine, and thf = tetrahydrofuran], 1335–44
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- Synthesis and conformation of 9,10-dihydroplatina-anthracenes: nuclear magnetic resonance and X-ray crystal structure studies, 1433–40
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- Trinuclear angular aggregates of rhodium: synthesis and crystal structures of  $[\text{Rh}_3(\mu_3\text{-SC}_6\text{H}_4\text{N})_2(\text{CO})_6][\text{ClO}_4]$  ( $\text{SC}_6\text{H}_4\text{N}$  = pyridine-2-thiolate) and  $[\text{Rh}_3(\mu_3\text{-C}_6\text{H}_4\text{NS}_2)_2(\text{CO})_6](\text{PF}_6)_2$  (tfbb)  $[\text{ClO}_4]$  ( $\text{C}_6\text{H}_4\text{NS}_2$  = benzothiazole-2-thiolate, tfbb = tetrafluorobenzobarrelene), 1493–502
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- Nuclear magnetic resonance evidence for three different isomers of  $[\text{Ru}_3(\mu\text{-H})(\mu\text{-bzim})(\text{CO})_9(\text{PPh}_3)]$  (bzim = benzimidazole). Crystal structure of  $[\text{Ru}_3(\mu\text{-H})(\mu\text{-bzim})(\text{CO})_9] \cdot \text{Me}_2\text{CO}$ , 1509–12
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- Reactivity of a cyclothiaphosphazene towards Grignard reagents. Crystal structure of the 1:1 adduct of the bi(cyclothiaphosphazene)  $[\text{NPM}(\text{NSOPh})_2]_2$  and benzene, 1613–20
- Synthesis and structural study of neutral mononuclear and anionic binuclear 2,4,6-trifluorophenyl derivatives of palladium(II). Crystal structure of  $[\text{P}(\text{CH}_2\text{Ph})\text{Ph}_3]_2[(\text{C}_6\text{F}_5\text{H}_2)_2\text{Pd}(\mu\text{-SCN})(\mu\text{-NCS})\text{Pd}(\text{C}_6\text{F}_5\text{H}_2)_2]$ , 1621–6
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- Photoreaction of  $[\text{MoH}_4(\text{Ph}_2\text{PCH}_2\text{CH}_2\text{PPh}_2)_2]$  with allyl carbonates to give hydridocarbonatolybdenum(II) complexes; X-ray crystal structure of a seven-co-ordinate molybdenum(II) complex  $[\text{MoH}(\text{O}_2\text{COEt})(\text{Ph}_2\text{PCH}_2\text{CH}_2\text{PPh}_2)_2]$ , 1645–50
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- Crystallographic characterization of the polyoxotungstate  $[\text{Eu}_3(\text{H}_2\text{O})_3(\text{SbW}_9\text{O}_{33})(\text{W}_5\text{O}_{18})_3]^{18-}$  and energy transfer in its crystalline lattices, 1687–96
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- Behaviour of  $[\text{Ru}_2(\text{CO})_8(\mu\text{-MeCO}_2\text{O}, \text{O}')( \text{P}^n\text{Bu}^n)_2]$  in the presence of hydrogen: synthesis and X-ray structure of polynuclear ruthenium carbonyl hydrides containing an encapsulated phosphide ligand, 1705–16
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- Synthesis and crystal structures of the dimetal compounds  $[\text{CoRh}(\text{CO})_2(\text{PPh}_3)(\eta^5\text{-C}_5\text{Me}_5)(\eta^5\text{-C}_5\text{B}_9\text{H}_{11})]$ ,  $[\text{Rh}_2(\text{CO})_2(\text{PPh}_3)(\eta^5\text{-C}_5\text{B}_9\text{H}_{11})]$ , and  $[\text{RhIrH}(\mu\text{-}\sigma\text{-}\eta^5\text{-C}_5\text{B}_9\text{H}_{10})(\text{CO})_2(\text{PPh}_3)_2]$ , 1747–54
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- Synthesis and crystal structure of new polynuclear rhodium complexes formed by reaction of bis( $\eta$ -ethylene)( $\eta^5$ -indenyl)rhodium with *t*-butylphosphine-acetylene, 1771–8
- Reactions of ruthenium(II)-co-ordinated phenyl phosphines: synthesis and X-ray crystal structures of the orthometallated complexes  $[\text{Ru}(\text{C}_6\text{H}_4\text{PR}^1\text{R}^2)(\text{CH}_2\text{SiMe}_3)(\eta^6\text{-C}_6\text{Me}_6)]$  ( $\text{R}^1 = \text{R}^2 = \text{Ph}$ ;  $\text{R}^1 = \text{Ph}$ ,  $\text{R}^2 = \text{Me}$ ;  $\text{R}^1 = \text{R}^2 = \text{Me}$ ) and of  $[\{\text{Ru}(\text{CH}_2\text{SiMe}_3)(\mu\text{-}\sigma\text{-}\eta^6\text{-PMe}_2\text{Ph})_2\}]_2$  containing bridging dimethylphenylphosphine ligands, 1779–92
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- Preparation and crystal structure of di- $\mu$ -acetato- $\mu$ -hydroxo-hexa(ethyl acetate)dialuminium tris(tetrachloroaluminate), 1809–12
- Metallaheteroborane chemistry. Part 6. Synthesis of *closo*-[2-( $\eta$ -ligand)-1,2- $\text{TeMB}_9\text{H}_{10}]$  complexes with  $\text{M}(\eta\text{-ligand}) = \text{Rh}(\eta^5\text{-C}_5\text{Me}_5)$  (1),  $\text{Ru}(\eta^6\text{-}p\text{-MeC}_6\text{H}_4\text{Pr})$  (2),  $\text{Ru}(\eta^6\text{-C}_6\text{Me}_6)$  (3), and of

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- nido*-[6-( $\eta^6$ -C<sub>6</sub>Me<sub>6</sub>)-8-(OEt)-6-RuB<sub>9</sub>H<sub>12</sub>] (4), their characterisation by nuclear magnetic resonance spectroscopy and, for (1) and (3), by X-ray crystallography, 1819–30
- Metallaheteroborane chemistry. Part 7. Synthesis, crystal structure, and characterisation of two dinuclear rhodotelluraboranes, [(PPh<sub>3</sub>)<sub>3</sub>RhTeB<sub>10</sub>H<sub>10</sub>]<sub>2</sub> and [(PPh<sub>3</sub>)<sub>3</sub>(CO)Rh<sub>2</sub>Te<sub>2</sub>B<sub>20</sub>H<sub>20</sub>], 1831–40
- Metallacyclic complexes. Part 4. Synthesis of platinumthietane-3-oxide complexes, and the single-crystal X-ray structure of [Pt{CH(COPh)S(O)CH(COPh)}(PPh<sub>3</sub>)<sub>2</sub>]-2CH<sub>2</sub>Cl<sub>2</sub>, 1853–60
- Tri- $\mu$ -bromo-bis[tribromoruthenate(III)] salts: a synthetic, structural, spectroscopic, and electrochemical study, 1879–88
- Photochemical reactions of tricarbonyl[hydrottris(1-pyrazolyl)borato]rhenium(I) in the presence of neutral donor ligands. X-ray crystal structures of the substitution derivatives [Re{HB(pz)}<sub>3</sub>(CO)<sub>2</sub>L], with L = C<sub>4</sub>H<sub>8</sub>O or PPh<sub>3</sub>, 1895–900
- Synthesis, solid-state (X-ray) and solution (nuclear magnetic resonance) studies of the hydridocarbido carbonyl cluster anion [Re<sub>3</sub>H<sub>2</sub>(CO)<sub>2</sub>]<sub>2</sub><sup>-</sup>, 1901–6
- Technetium(V) nitrido complexes with tetra-azamacrocycles: monocationic and neutral octahedral complexes containing the [T≡N]<sup>2+</sup> core. Crystal structure of [T≡N(L<sup>1</sup>)(H<sub>2</sub>O)]·2H<sub>2</sub>O (H<sub>2</sub>L<sup>1</sup> = 1,4,8,11-tetra-azacyclotetradecane-5,7-dione), 1935–40
- Reactions of co-ordinated ligands. Part 48. Reactivity studies of the octatrenediylidenedimolybdenum complexes [Mo<sub>2</sub>( $\mu$ -C<sub>8</sub>H<sub>6</sub>Me<sub>8</sub>( $\eta$ -C<sub>5</sub>H<sub>2</sub>)<sub>2</sub>)] and [Mo<sub>2</sub>( $\mu$ -C<sub>8</sub>H<sub>6</sub>Bu<sub>4</sub>)( $\eta$ -C<sub>5</sub>H<sub>2</sub>)<sub>2</sub>]]. Crystal structures of [Mo<sub>2</sub>( $\mu$ -C<sub>8</sub>Me<sub>8</sub>(CH<sub>3</sub>)( $\eta$ -C<sub>5</sub>H<sub>2</sub>)<sub>2</sub>)] [CF<sub>3</sub>SO<sub>3</sub>], [Mo<sub>2</sub>( $\mu$ -C<sub>8</sub>Me<sub>8</sub>( $\mu$ -Cl)( $\eta$ -C<sub>5</sub>H<sub>2</sub>)<sub>2</sub>)] [SbCl<sub>4</sub>·CH<sub>2</sub>Cl<sub>2</sub>], and [Mo<sub>2</sub>( $\mu$ -C<sub>8</sub>H<sub>6</sub>Bu<sub>4</sub>)( $\mu$ -*cis*-H)( $\eta$ -C<sub>5</sub>H<sub>2</sub>)<sub>2</sub>)] [BPh<sub>4</sub>]-CH<sub>2</sub>Cl<sub>2</sub>, 1957–70
- Two phthalocyanine units 'stapled' by carbon-carbon  $\sigma$  bonds in a new sandwich-type molecule: {5,5':19,19'-bis[phthalocyaninato(2-)]titanium(IV)}. Synthesis, X-ray crystal structure, and properties, 1971–8
- X-Ray crystal structure of a copper(II) complex of the neurotoxic amino acid, DL- $\alpha$ -amino- $\beta$ -methylaminopropionic acid, 1985–8
- Synthesis and structural characterization of an air-stable 17-electron complex containing the [Cr(NO)]<sup>2+</sup> core, 1989–92
- Reactivity of Group 6 cationic complexes. Part 5. Photochemical water reduction by a chromium(II) metallorganic system and X-ray crystal and molecular structure of *cis*- and *trans*-[Cr(CO)<sub>2</sub>( $\eta$ -C<sub>5</sub>Me<sub>5</sub>)(POMe)<sub>2</sub>]<sup>+</sup>, 2007–12
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- Determination of structural features of electrogenerated *trans*-[MoCl(NMe)(Ph)<sub>2</sub>PC<sub>2</sub>H<sub>4</sub>CH<sub>2</sub>PC<sub>2</sub>H<sub>4</sub>]<sub>2</sub><sup>2+</sup> by multinuclear electron paramagnetic resonance and electron nuclear double resonance spectroscopy and comparison of interatomic distances with those measured by X-ray analysis of the parent monocation, 2021–8
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- Reactions of nucleophiles with bis( $\mu$ -thiosulphato- $S$ )-bis(dinitrosylferrate(2-)),  $[\text{Fe}_2(\text{S}_2\text{O}_3)_2(\text{NO})_4]^{2-}$ , and of electrophiles with heptanitrosyltri- $\mu$ -thio-tetraferate(1-),  $[\text{Fe}_4\text{S}_3(\text{NO})_7]^-$ : new routes to bis( $\mu$ -organothiolato)-bis(dinitrosyliron) complexes  $[\text{Fe}_2(\text{SR})_2(\text{NO})_4]$  and the crystal and molecular structure of trimethylsulphonium heptanitrosyltri- $\mu$ -thio-tetraferate(1-),  $\text{SMe}_3[\text{Fe}_4\text{S}_3(\text{NO})_7]$ , 2685–90.
- Manganese complexes with  $\text{S}_2\text{CPEt}_3$  ligands. X-ray crystal structures of *cis-trans*- $[\text{Mn}(\text{CO})_2(\text{PEt}_3)_2(\text{S}_2\text{CPEt}_3)]\text{ClO}_4$  and *cis-trans*- $[\text{Mn}(\text{CO})_2(\text{PEt}_3)_2(\text{S}_2\text{CH}_3)]$ , 2719–28.
- Lattice effects in the Mössbauer spectra of salts of  $[\text{Fe}_4\text{S}_4(\text{SBU})_4]^{2-}$ . Crystal structures of  $[\text{NMe}_4][\text{Fe}_4\text{S}_4(\text{SBU})_4]\cdot\text{HSBU}^+$  and  $[\text{N}(\text{n-C}_4\text{H}_9)_4][\text{Fe}_4\text{S}_4(\text{SBU})_4]\cdot\text{HSBU}^+$ , 2735–42.
- Heavier halides of early transition elements by halide-exchange reactions. Crystal and molecular structure of  $[\text{Ph}_3\text{C}]_2[\text{Hf}_2\text{Cl}_{10}]$ , 2743–6.
- Palladium(II) complexes of *N,N*-co-ordinating arylazouracil ligands: infrared spectroscopy, thermal properties, and X-ray crystal structure of *trans*-bis(6-amino-1,3-dimethyl-5-phenylazouracilato)palladium(II), 2747–52.
- Dilithium tetra(*t*-butylimido)-molybdate(VI) and -tungstate(VI) and some reactions thereof. X-ray crystal structures of  $[\text{W}(\mu\text{-NBu})_2\text{AlX}_2]_2$  ( $\text{X} = \text{Cl}$  or  $\text{Me}$ ),  $[\text{W}(\text{NBu})_2(\text{NH}_2\text{Bu})\text{Cl}(\mu\text{-Cl})_2]$ , and  $[\text{W}_2\text{Cu}_4(\text{NBu})_2(\mu\text{-NBu})_6(\text{NH}_2\text{Bu})_2][\text{BF}_4]$ , 2753–62.
- Copper(II) and nickel(II) complexes of  $N,N'$ ,  $N''$ ,  $N'''$ -tetrakis(2-aminoethyl)-1,4,7,11-tetra-azacyclotetradecane (taei), -1,4,8,12-tetra-azacyclopentadecane (taep), and -1,5,9,13-tetra-azacyclohexadecane (taeh). Crystal structures of



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- [Cu<sub>2</sub>(taep)](ClO<sub>4</sub>)<sub>4</sub>, [Cu<sub>2</sub>(taeh)](ClO<sub>4</sub>)<sub>4</sub>, and [Cu<sub>2</sub>(N<sub>3</sub>)(taeh)](ClO<sub>4</sub>)<sub>3</sub>, 2763–70
- Synthesis, spectroscopic and structural characterization of mono- and bi-nuclear iron(II) complexes with 2,6-diacylpyridine bis(acylhydrazones), 2771–8
- Synthesis of (pentamethylcyclopentadienyl)nitrosylmolybdenum complexes containing halide, methyl, or cyclopentadienyl ligands. Crystal structures of [MoMe(η-C<sub>5</sub>H<sub>5</sub>)(η-C<sub>5</sub>Me<sub>5</sub>)(NO)] and [(Mo(η-C<sub>5</sub>Me<sub>5</sub>O)(μ-O))<sub>2</sub>], 2779–84
- Synthetic, spectroscopic, and X-ray crystallographic studies on phenylcyanamidocopper(II) complexes. The characterization of three different co-ordination modes for phenylcyanamide anions, 2785–92
- Novel S–N ring contractions using the 4-phenyl-1,2,3,5-dithiadiazole dimer, the synthesis and X-ray crystal structures of [(PhCN<sub>2</sub>S<sub>2</sub>)<sub>2</sub>Cl][S<sub>3</sub>N<sub>3</sub>], [PhCN<sub>2</sub>S<sub>2</sub>][S<sub>3</sub>N<sub>3</sub>], and [PhCN<sub>2</sub>S<sub>2</sub>][S<sub>3</sub>N<sub>3</sub>]Cl, and an *ab initio* molecular-orbital study of the bonding in [PhCN<sub>2</sub>S<sub>2</sub>][S<sub>3</sub>N<sub>3</sub>], 2793–802
- Gold–boron chemistry. Part 3. The synthesis, characterisation, and molecular structure of (H<sub>11</sub>C<sub>6</sub>)<sub>2</sub>PAu<sub>2</sub>B<sub>9</sub>H<sub>10</sub>. Comments on the 'anomalous' structure of B<sub>9</sub>H<sub>12</sub>, 2803–8
- Co-ordination of 6,13-dimethyl-1,4,8,11-tetra-azacyclotetradecane-6,13-diamine to platinum(II) and palladium(II). Syntheses, characterisation, and X-ray crystal structures of the perchlorate salts of both complexes, 2853–8
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- Reactivity of [Os<sub>3</sub>H(CO)<sub>10</sub>(MeCN)(Si(OR)<sub>3</sub>)] (R = Me or Et) towards diphosphines. X-Ray crystal structures of [Os<sub>3</sub>H(CO)<sub>10</sub>(Si(OEt)<sub>3</sub>)(dppe)], [(Os<sub>3</sub>H(CO)<sub>10</sub>(Si(OMe)<sub>3</sub>)]<sub>2</sub>(μ-dppe) and [(Os<sub>3</sub>(CO)<sub>10</sub>(dppe)] (dppe = Ph<sub>2</sub>PCH<sub>2</sub>CH<sub>2</sub>PPh<sub>2</sub>), 2863–72
- Polyhedral iridamonocarbaborane chemistry. Two ten-vertex *arachno*-6,9-iridacarbadecaboranes and some related ten-vertex carbaborane chemistry. Comparative nuclear magnetic resonance studies and the molecular structure of [8-*arm*-9-(CO)-9,9-(PPh<sub>3</sub>)<sub>2</sub>-9-H-*arachno*-9,6-IrCB<sub>9</sub>H<sub>12</sub>], 2887–94
- Gold(I) complexes of 1-diphenylarsino-2-diphenylphosphinoethane (dadpe): solution studies, X-ray crystal structures, and cytotoxicity of [(AuCl)<sub>2</sub>dadpe]·0.5dma (dma = dimethylacetamide) and [Au(dadpe)<sub>2</sub>Cl]·2H<sub>2</sub>O, 2913–22
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- Synthesis and characterization of transition-metal-substituted germanium and tin azides: X-ray crystal structures of [(Fe(CO)<sub>5</sub>)(cp)<sub>2</sub>](E(N<sub>3</sub>)<sub>2</sub>) (cp = η-C<sub>5</sub>H<sub>5</sub>, E = Ge or Sn), 2953–8
- Synthesis and spectroscopic properties of [AsPh<sub>4</sub>][Mo(bipy)(CN)<sub>2</sub>·0.5bipy·2H<sub>2</sub>O] (M = Mo or W); X-ray crystal structure of the tungsten complex, 2959–64
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- Syntheses, crystal structures, and electrochemical properties of binuclear copper(II), [Cu<sub>2</sub>L<sup>1</sup>Cl<sub>2</sub>][ClO<sub>4</sub>]<sub>2</sub>·4CH<sub>3</sub>CN and copper(II), [Cu<sub>2</sub>L<sup>1</sup>][ClO<sub>4</sub>]<sub>2</sub> complexes [L<sup>1</sup> = 2,5-bis(*N,N*-bis(2'-pyridylethyl)aminomethyl)pyrazine], 2985–90
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- Mono- and di-nuclear nickel(II) complexes with Schiff bases derived from 4-substituted 2,6-diformylphenol and 7-amino-4-methyl-5-azahept-3-en-2-one; crystal and molecular structure of [4-chloro-2,6-bis(4-methyl-2-oxo-5,8-diazanona-3,8-dienyl)phenolato(3-)]-dinickel(II) bromide hemihydrate, 3063–70
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- Dynamic processes in the solid state. X-Ray structural characterization and dynamic behaviour of [Mo(C<sub>6</sub>H<sub>5</sub>Me)(CO)<sub>3</sub>], 3143–6
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- Neutral pentanuclear Pt<sub>2</sub>Ag<sub>3</sub> complexes: crystal structure of *trans*-[PtCl<sub>2</sub>(μ-SC<sub>6</sub>H<sub>5</sub>)Pt(C<sub>6</sub>F<sub>5</sub>)<sub>2</sub>(η<sup>2</sup>-C<sub>6</sub>H<sub>5</sub>Me)]<sub>2</sub>, 3151–4
- Manganese(II) complexes containing the tridentate ligands 2,6-bis[1-(phenylimino)ethyl]pyridine, L<sup>1</sup>, or 2,6-bis[1-(4-methoxyphenylimino)ethyl]pyridine, L<sup>2</sup>. The molecular structures of five-co-ordinate [MnBr<sub>2</sub>L<sup>1</sup>] and the zinc analogue [ZnCl<sub>2</sub>L<sup>1</sup>], 3161–8
- Synthesis of the cationic bis(but-2-yn-1-yl) complex [W(CO)(NCMe)(S<sub>2</sub>CNC<sub>4</sub>H<sub>9</sub>)(η<sup>2</sup>-MeC<sub>2</sub>Me)]BF<sub>4</sub> and its reactions with neutral bidentate donor ligands (L–L) to give [W(CO)(S<sub>2</sub>CNC<sub>4</sub>H<sub>9</sub>)(L–L)(η<sup>2</sup>-MeC<sub>2</sub>Me)]BF<sub>4</sub>. X-ray crystal structure determination of [W(CO)(S<sub>2</sub>CNC<sub>4</sub>H<sub>9</sub>)(Ph<sub>2</sub>PCH<sub>2</sub>PPh<sub>2</sub>)(η<sup>2</sup>-MeC<sub>2</sub>Me)]BF<sub>4</sub>, 3169–74
- Copper co-ordination compounds of a chelating imidazole-thioether ligand. The molecular structures of [1,3-bis(5-methyl-4-imidazolyl)-2-thiopropane]bis(nitrato)copper(II) and bis[1,3-bis(5-methyl-4-imidazolyl)-2-thiopropane]copper(II) bis(tetrafluoroborate)-ethanol(1/2), 3175–82
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- Synthesis and characterisation of half-sandwich tantalum compounds in oxidation states (I)–(V): tertiary phosphine, acetylene, butadiene, carbonyl, and oxo derivatives. X-Ray crystal structures of [Ta(C<sub>3</sub>Me<sub>3</sub>)Cl<sub>3</sub>(PMe<sub>3</sub>)] and [Ta(C<sub>3</sub>Me<sub>3</sub>)Cl<sub>2</sub>(CO)<sub>2</sub>(PMe<sub>3</sub>)], 3199–210
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- Preparation, properties, and crystal and molecular structures of *trans*-tetrakis(acetic acid)dichlorovanadium(II) and hexakis(acetic acid)vanadium(II) dibromide, 3229–34
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- Reactions of co-ordinated ligands. Part 49. Ligand-displacement and oxidative-addition reactions of [Ru(P(OMe)<sub>3</sub>)(η<sup>4</sup>-C<sub>6</sub>Ph<sub>4</sub>)(η<sup>4</sup>-C<sub>6</sub>H<sub>5</sub>)]; crystal structures of [Ru(NCMe)(P(OMe)<sub>3</sub>)(η<sup>3</sup>-C<sub>3</sub>H<sub>5</sub>)(η<sup>4</sup>-C<sub>4</sub>Ph<sub>4</sub>)] [SbF<sub>6</sub>] and [Ru(C(Ph)-C(Ph)C(η<sup>2</sup>-C<sub>6</sub>H<sub>5</sub>)-C(Ph)CH<sub>2</sub>CH=CH<sub>2</sub>){P(OMe)<sub>3</sub>}]<sub>2</sub> [BF<sub>4</sub>], 2571–80

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- Synthesis and crystal structure of new polynuclear rhodium complexes formed by reaction of bis(η-ethylene)(η<sup>5</sup>-indenyl)rhodium with t-butylphosphoacetylene, 1771–8
- Synthesis and X-ray crystal structure of a naphthalene complex of ruthenium, [Ru(η<sup>6</sup>-C<sub>10</sub>H<sub>8</sub>)(η<sup>4</sup>-cod)] (cod = cyclo-octa-1,5-diene), 2299–302

**CYCLO-OCTATETRAENE**

- Reaction of [Rh(η<sup>4</sup>-cot)(η<sup>5</sup>-C<sub>8</sub>H<sub>8</sub>)] (cot = cyclo-octatetraene) with [Fe(P(OMe)<sub>3</sub>)(NO)<sub>2</sub>(η<sup>2</sup>-CH<sub>2</sub>CHCH<sub>2</sub>)]<sup>+</sup>: allylic alkylation of a cyclopentadienyl ring, 373–4

- Allylic alkylation of complexed cyclo-octatetraene (cot) via the reaction of [Fe(P(OMe)<sub>3</sub>)(NO)<sub>2</sub>(η<sup>2</sup>-allyl)]<sup>+</sup> with [M(CO)<sub>3</sub>(η<sup>4</sup>-cot)] (M = Fe or Ru) derivatives; X-ray structure of [Ru(CO)<sub>2</sub>(PPh<sub>3</sub>)(η<sup>2</sup>-η<sup>3</sup>-C<sub>8</sub>H<sub>8</sub>R)] [PF<sub>6</sub>]<sub>2</sub>·0.5CH<sub>2</sub>Cl<sub>2</sub> [R = CH<sub>2</sub>C(Me)=CH<sub>2</sub>], 1291–300

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**MOLYBDENUM (contd)**

- $C_6H_5)_2] \cdot 2CH_2Cl_2$  and  $[MoW_2(\mu-C_6H_5)_2(\mu-C_6H_4Me)_2](CO)_4(\eta-C_3H_5)_2] \cdot 0.5CH_2Cl_2$ , 953-8
- Syntheses and structural characterizations of a series of  $Mo(W)-Cu-S$  compounds of bidentate dialkylthiocarbamate ligands. Crystal structure of  $[NEt_4][Mo_2Cu_2S_4O_2(Me_2NCS)_3]$ , 1023-6
- Synthesis and characterization of octamolybdates containing co-ordinatively bound salicylideneiminato and methioninato (MetO) ligands. Crystal structures of  $[NH_4Pr_2][Mo_8O_{22}(OH)_4(OC_6H_4CH=NPr-2)] \cdot 6MeOH$  and  $[Himorph]_4[Mo_8O_{22}(OH)_4(MetO)_2] \cdot 4H_2O$  (morph = morpholine), 1125-30
- Spectroscopic studies on matrix-isolated molybdenum pentachloride, 1529-32
- Photoreaction of  $[MoH_4(Ph_2PCH_2CH_2PPh_2)_2]$  with allyl carbonates to give hydridocarbonylmolybdenum(II) complexes; X-ray crystal structure of a seven-co-ordinate molybdenum(II) complex  $[MoH(O_2COEt)(Ph_2PCH_2CH_2PPh_2)_2]$ , 1645-50
- Molybdenum(VI) complex formation. Part 4. Equilibria and thermodynamic quantities for the reactions with tartrate in 1.0 mol dm<sup>-3</sup> sodium chloride, 1951-6
- Reactions of co-ordinated ligands. Part 48. Reactivity studies of the octatrienediylmolybdenum complexes  $[Mo_2(\mu-C_6Me_8)(\eta-C_3H_5)_2]$  and  $[Mo_2(\mu-C_6H_4Bu^t)(\eta-C_3H_5)_2]$ . Crystal structures of  $[Mo_2(\mu-C_6Me_8CH_2)(\eta-C_3H_5)_2][CF_3SO_3]$ ,  $[Mo_2(\mu-C_6Me_8)(\eta-C_3H_5)_2][SbCl_4] \cdot CH_2Cl_2$ , and  $[Mo_2(\mu-C_6H_4Bu^t)(\mu_{40},C_6H)(\eta-C_3H_5)_2][BPh_4] \cdot CH_2Cl_2$ , 1957-70
- A dynamic nuclear magnetic resonance study of the effects of methyl group substitution of the hexahapto-arene on the intramolecular rotations of ( $\eta^6$ -arene)dicarbonyl(triphenylphosphine)-chromium(0) and -molybdenum(0) complexes, 2001-6
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- Determination of structural features of electrogenerated *trans*- $[MoCl(NMe)(Ph_2PCH_2CH_2PPh_2)_2]^{2+}$  by multinuclear electron paramagnetic resonance and electron nuclear double resonance spectroscopy and comparison of interatomic distances with those measured by X-ray analysis of the parent monocation, 2021-8
- Camphor-derived  $\beta$ -ketophosphonate complexes of molybdenum(VI) and titanium(IV); crystal and molecular structure of dichloro[(1*R*)-endo-(+)-3-(diethoxyphosphoryl)camphor]dioxomolybdenum(VI), 2195-200
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 98. Tri- and tetra-nuclear metal compounds with ethyldiyne or *p*-tolylmethylidyne groups, and having both cyclopentadienyl and carborane ligands, 2239-46
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 99. Synthesis of the cluster compounds  $[MWCoAu(\mu-CC_6H_4Me-4)(\mu_3-CR)(CO)(\eta-C_3H_5)(\eta-C_5Me_5)(\eta^3-C_2B_9H_9Me_2)]$  ( $M = Mo$  or  $W$ ,  $R = C_6H_4Me-4$ ;  $M = W$ ,  $R = Me$ ); crystal structure of the complex  $[MoWCoAu(\mu-CC_6H_4Me-4)(\mu_3-CC_6H_4Me-4)(CO)_4(\eta-C_3H_5)(\eta-C_5Me_5)(\eta^3-C_2B_9H_9Me_2)] \cdot CH_2Cl_2$ , 2247-52
- New fluxional seven-co-ordinate molybdenum(II) and tungsten(II) complexes: X-ray structure of the pyridine-2-thionato complex  $[W(C_5H_4NS)(CO)_4(PMe_2Ph)]$ , 2321-4
- Chemistry of phosphido-bridged dimolybdenum complexes. Part 5. Synthesis and protonation of a phosphido-bridged dimolybdenum complex containing a terminal alkyl ligand: X-ray crystal structures of  $[Mo_2(\mu-PPh_2)_2(CO)(\eta-C_3Me_5)(\eta-C_3H_5)_2]$  and  $[Mo_2(\mu-CO)(\mu-PPh_2)(\mu-Ph_2PC(Me)=CHMe)(\eta-C_3H_5)_2][BF_4]$ , 2359-66
- Chemistry of phosphido-bridged dimolybdenum complexes. Part 6. The insertion of allene into co-ordinated  $\mu$ -vinyl and  $\eta^3$ -allyl ligands; X-ray crystal structures of  $[Mo_2(\eta-C_3H_5)_2(\mu-PMe_2)(\eta^3-CH_2C(CH_2)C(Me)=CH_2)(CO)_3]$  and  $[Mo_2(\eta-C_3H_5)_2(\mu-\eta^3-CH_2C(CH_2)C(Me)=CH_2)(\mu-PMe_2)(CO)_2]$ , 2367-74
- Unexpected nitrogen-oxygen exchange reactions in cyclic metallaphosphazenes; synthesis and X-ray crystal structures of  $[Mo(OPPh_2NHPPh_2O)_2O_2Cl_2]$ ,  $[Mo(OPPh_2NPPPh_2O)_2(O)Cl]$ , and  $Mo(OPPh_2NPPPh_2O)_2O_2]$ , 2387-92
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- Reaction of polynuclear acetylide clusters, synthesis of pentanuclear heterometallic clusters by addition of  $[M(CO)_3(C\equiv CPh)(\eta-C_5H_5)]$  to  $[Mo_5(CO)_3(C\equiv CPh)(\eta-C_5H_5)]$  ( $M = Mo$  or  $W$ ). Crystal structures of  $[Mo_5(CO)_3(C\equiv CPh)(\eta-C_5H_5)_2] \cdot 2H_2O$  and  $[Mo_5W(CO)_3(C\equiv CPh)(\eta-C_5H_5)_2] \cdot 2H_2O$  and  $[Mo_5W(CO)_3(C\equiv CPh)(\eta-C_5H_5)_2] \cdot 2H_2O$ , 3025-32
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- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 103. Carborane molybdenum and tungsten dimetal complexes, 3481-8
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- Tripodal benzimidazole complexes of tricarbonylmolybdenum(0) and of iron(III), 3647-54
- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 106. Synthesis and reactions of the alkylidyne complexes  $[M(\equiv CR)(CO)_2(C_6F_5)AuC(pz)_3]$  ( $M = W$  or  $Mo$ ,  $R = alkyl$  or aryl,  $pz = pyrazol-1-yl$ ); crystal structure of  $[WPTAu(C_6F_5)(\mu_3-CMe)(CO)_2(PMe_2Ph)_2](C_6F_5)AuC(pz)_3]$ , 3701-8
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- Synthesis and electrochemistry of crown ether dithiolene complexes, 3789-92
- Synthesis of the  $W \equiv W$  triply bonded dimers  $[W_2(\eta-C_5H_4R)_2X_4]$  ( $X = Cl$ ,  $R = Me$  or  $Pr$ ;  $X = Br$ ,  $R = Pr$ ) and X-ray crystal structures of  $[W(\eta-C_5H_4Pr)Cl_4]$  and  $[W_2(\eta-C_5H_4Pr)_2Cl_4]$ , 3793-800

**MOLYBDENUM-95**

Molybdenum-95 nuclear magnetic resonance and vibrational



**MOLYBDENUM-95 (contd)**

spectroscopic studies of molybdenum(vi) species in aqueous solutions and solvent extracts from hydrochloric and hydrobromic acid: evidence for the complexes  $[\text{Mo}_2\text{O}_5(\text{H}_2\text{O})_6]^{2+}$ ,  $[\text{MoO}_2\text{X}_2(\text{H}_2\text{O})_2]$  (X = Cl or Br), and  $[\text{MoO}_2\text{Cl}_4]^{2-}$ , 41–8

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Lattice effects in the Mössbauer spectra of salts of  $[\text{Fe}_4\text{S}_4(\text{SBU})_4]^{2-}$ . Crystal structures of  $[\text{NMe}_4]_2[\text{Fe}_4\text{S}_4(\text{SBU})_4]\cdot\text{HSBU}^+$  and  $[\text{N}(\text{n-C}_4\text{H}_9)_4]_2[\text{Fe}_4\text{S}_4(\text{SBU})_4]\cdot\text{HSBU}^+$ , 2735–42

Qualitative interpretation of Mössbauer data for some  $[\text{I}]\text{ferrocenophanes}$ ; Fe–Pd dative bonding in  $[(\text{SC}_2\text{H}_4)_2\text{FePd}(\text{PPh}_3)]$  and Fe–Hg and Fe–H<sup>+</sup> bonding in ferrocene, 3513–16

Lattice effects in the Mössbauer spectra of salts of  $[\text{Fe}_4\text{S}_4(\text{SBU})_4]^{2-}$ . Crystal structures of  $[\text{NMe}_4]_2[\text{Fe}_4\text{S}_4(\text{SBU})_4]\cdot\text{HSBU}^+$  and  $[\text{N}(\text{n-C}_4\text{H}_9)_4]_2[\text{Fe}_4\text{S}_4(\text{SBU})_4]\cdot\text{HSBU}^+$  (1990, 2735), 3563–4

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Synthesis and X-ray crystal structure of a naphthalene complex of ruthenium,  $[\text{Ru}(\eta^6\text{-C}_{10}\text{H}_8)(\eta^4\text{-cod})]$  (cod = cyclo-octa-1,5-diene), 2299–302

Oxidative addition of  $\text{I}_2$ , MeI, and  $\text{CH}_2\text{I}_2$  to the naphthalene-1,8-diamide bridged complex  $[\text{Ir}_2(\mu\text{-1,8-(NH}_2\text{C}_6\text{H}_4)_2(\text{CO})_2(\text{PPh}_3)_2]$ . X-ray crystal structure of  $[\text{Ir}_2(\mu\text{-1,8-CH}_2)_2(\mu\text{-1,8-(NH}_2\text{C}_6\text{H}_4)_2(\text{CO})_2(\text{PPh}_3)_2)]\cdot\text{CH}_2\text{Cl}_2$ , 2587–92

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Stereochemistry of trivalent aqua ions: low temperature neutron diffraction structures of  $\text{CsFe}(\text{SO}_4)_2\cdot 12\text{H}_2\text{O}$  and  $\text{CsFe}(\text{SeO}_4)_2\cdot 12\text{H}_2\text{O}$ , 395–400

Concept of the  $\text{H}(\delta^+) \cdots \text{H}(\delta^-)$  interaction. A low-temperature neutron diffraction study of *cis*- $[\text{Ir}(\text{OH})(\text{PMe}_3)_4]\text{PF}_6$ , 1429–32

Low-temperature neutron-diffraction structure of  $[\text{Ru}(\text{OH}_2)_6]^{3+}$  in the caesium sulphate alum lattice  $\text{CsRu}[\text{SO}_4]_2\cdot 12\text{H}_2\text{O}$ , 3507–12

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Synthesis of a 13-membered macrocyclic tetrathiadioxime and its mono- and tri-nuclear complexes with tetrahedrally co-ordinated palladium(II), 5–8

Solution chemistry in non-co-ordinating solvents ( $\text{CH}_2\text{Cl}_2$ ,  $\text{CHCl}_3$ ) of nickel(II) and nickel(III) complexes of the lipophilic macrocycle 1-hexadecyl-1,4,8,11-tetra-azacyclotetradecane. The emphasized role of the anion co-ordination, 55–60

Synthesis and characterization of homo- and hetero-nuclear mixed thiolate phosphine complexes with  $\text{Ni}^{\text{II}}$ ,  $\text{Pd}^{\text{II}}$ , and  $\text{Pt}^{\text{II}}$ . Crystal and molecular structure of  $[\text{bis}(\mu\text{-}(3\text{-dimethylamino-1-propanethiolato)})\text{-bis}\{[1,2\text{-bis(diphenylphosphino)ethane}]\text{nickel(II)}\}]$  tetraphenylborate, 143–50

A reinterpretation of the crystal structures of the *p*-, *m*-, and *o*-xylene and carbon disulphide clathrates of tetrakis(4-ethylpyridine)di-isothiocyanatonickel(II), 369–72

Direct electrochemical synthesis of pyridine-2-thionato complexes of nickel(II): the crystal structure of (2,2'-bipyridine)bis(pyridine-2-thionato)nickel(II)-2,2'-bipyridine(2/1), 531–4

Ligand substitution reactions of the nickel-sulphur cluster  $[\text{Ni}_3\text{S}_2(\text{PET}_3)_6]^{2+}$ . Phosphorus-31 nuclear magnetic resonance characterization of mono- and di-substituted species and X-ray crystal structure of  $[\text{Ni}_3(\mu_3\text{-S})_2(\text{PET}_3)_2\text{Cl}]\text{BPh}_4$ , 773–80

Electronic structures of transition-metal four-co-ordinated complexes. Part 3. Theoretical *ab initio* and ultraviolet photoelectron spectroscopy study of nickel(II), palladium(II), and platinum(II) bis(*O,O'*-diethyl dithiophosphate) square-planar complexes, 849–58

Synthesis and characterisation of the nickel(II) and copper(II) complexes of new quinquedentate ( $\text{N}_3\text{O}_2$ ) ligands and the crystal structure of aqua[3,15-diacetyl-9-methyl-5,9,13-triazaheptadeca-3,14-diene-2,16-dionato-(2-)- $\text{N}^3\text{N}^3\text{N}^3\text{O}^2\text{O}^16$ ]nickel(II) dihydrate, 935–42

Nickel nitrosyl complexes with diphosphines. The crystal and molecular structure of  $[(\text{dppe})(\text{ON})\text{Ni}(\mu\text{-dppe})\text{Ni}(\text{NO})(\text{dppe})][\text{BF}_4]_2$  (dppe =  $\text{Ph}_2\text{PCH}_2\text{CH}_2\text{PPh}_2$ ), 1035–42

Isolation and crystal structure of the *trans* isomer of (6,7,13,14,15,16,17,18,24,25,31,32,33,34,35,36-hexadecahydrotetra-benzo[*e,m,s,a*][1,14,15,18,8,11,22,25]tetraoxatetra-azacyclo-octacosine)disothiocyanatonickel(II), 1111–14

Potentiometric, calorimetric and spectroscopic study of complexation between copper(II), nickel(II), and cobalt(II) and L,L-dipeptides containing weakly or non-co-ordinating side chains, 1137–46

Synthesis of some cationic 16- and 18-electron nickel alkyl phosphine complexes containing bidentate ligands: ligand-dependent square-planar, trigonal-bipyramidal, and square-pyramidal co-ordination geometries, their reactions with CO and alkynes, and the crystal structure of  $[\text{Ni}(\text{CH}_2\text{SiMe}_3)(\text{PMe}_3)_3]\text{BF}_4$ , 1213–20

Theoretical versus experimental charge and spin-density distributions in *trans*- $[\text{Ni}(\text{NH}_3)_4(\text{NO})_2]$ , 1417–28

Dimer species in aqueous solutions of *m*-phenylenediamine-*N,N,N',N'*-tetra-acetic acid (*m*-H<sub>4</sub>pdta) with copper(II) and of pyridine-2,6-diamine-*N,N,N',N'*-tetra-acetic acid (2,6-H<sub>4</sub>pydta) with nickel(II). X-Ray crystal structures of  $\text{Na}_4[\text{Cu}_2(\text{m-pdta})_2]\cdot 18\text{H}_2\text{O}$ ,  $\text{Na}_4[\text{Co}_2(\text{m-pdta})_2]\cdot 10\text{H}_2\text{O}$ , and  $\text{Na}_4[\text{Ni}_2(2,6\text{-pydta})_2]\cdot 8\text{H}_2\text{O}$ , 1477–92

Synthesis of *cis* and *trans* isomers of *N,N'*-dimethyl-1,2-ethanediamine complexes of nickel(II) nitrate and solid-phase thermal *cis-to-trans* isomeric transformation, 1563–8

A convenient preparation of 2,2':6',6''-2"-quaterpyridine; the crystal and molecular structures of 2,2':6',6''-2"-quaterpyridine and bis(acetonitrile)(2,2':6',6''-2"-quaterpyridine)nickel(II) hexafluorophosphate-acetonitrile (1/1), 1669–74

Synthesis of chiral atropoisomeric square-planar nickel(II) and copper(II) complexes formed by macrocyclic ligands containing pendant polyether groups and a quaternary ammonium group, 1867–72

Investigation of the electronic structure of tetrakis(trifluorophosphine)nickel by photoelectron spectroscopy with variable photon energy, 1907–14

Peripheral functionalisation of the nickel(II) complex of a tetradentate ( $\text{N}_2\text{O}$ ) ligand via a pendant amine substituent, 2029–34

Electrochemical synthesis of zinc(II), cadmium(II), and nickel(II) complexes of tetradentate Schiff-base ligands derived from aminothioether imidazoles, 2101–4

Synthesis, crystal structure, magnetic properties, and solution study of the complex  $\mu\text{-oxalato-bis[aqua(1,4,7-triazacyclononane)nickel(II)]$  nitrate dihydrate, 2213–18

Optical and magnetic properties of  $\text{K}[\text{M}(\text{S}_2\text{C}_2(\text{CN})_2)_2]\cdot \text{H}_2\text{O}$  (M = Ni, Pt, or Au), 2287–92

Synthesis of conformational isomers, thermally induced isomerism, and crystal structure of *cis*-di-isothiocyanatobis(*N*-methylpropane-1,3-diamine)nickel(II), 2347–50

Synthesis and characterization of dinickel(II) and dipalladium(II) complexes of the macrocyclic binucleating ligand 3,13-dimethyl-3,13-dinitro-1,5,11,15-tetra-azacyclododecane-8,18-dithiol ( $\text{L}^2$ ). Crystal structure of the complex  $[\text{Ni}_2(\text{L}^2 - 2\text{H})][\text{NO}_3]_2\cdot 3.5\text{H}_2\text{O}$ , 2491–6

New nickel(II) and palladium(II) complexes with unsymmetrical quadridentate Schiff bases derived from 8-amino-4-methyl-5-azaoc-3-en-2-one. Crystal and molecular structure of [4,10-dimethyl-3-(nitroso-κ $\text{N}$ )-5,9-(diaz-κ $\text{N}$ )-trideca-3,10-diene-2,12-(dionato-κ $\text{O}$ )(2-)]nickel(II), 2497–502

Copper(II) and nickel(II) complexes of *N,N',N'',N'''*-tetrakis(2-aminoethyl)-1,4,7,11-tetra-azacyclotetradecane (taei), -1,4,8,12-tetra-azacyclopentadecane (taep), and -1,5,9,13-tetra-azacyclohexadecane (taeh). Crystal structures of  $[\text{Cu}_2(\text{taep})][\text{ClO}_4]_4$ ,  $[\text{Cu}_2(\text{taeh})][\text{ClO}_4]_4$ , and  $[\text{Cu}_2(\text{N}_3)(\text{taeh})][\text{ClO}_4]_3$ , 2763–70

Charge density and spectra of dichlorotetrakis(thiourea)nickel(II): an *ab initio* discrete variation X $\alpha$  calculation, 2947–52

Spectroscopic and electrical properties of  $[\text{Cu}(\text{C}_3\text{Se}_3)_2]^{2-}$  and  $[\text{Ni}(\text{C}_3\text{Se}_3)_2]^{2-}$  anion complexes and X-ray crystal structures of  $[\text{NMe}_4]_2[\text{Cu}(\text{C}_3\text{Se}_3)_2]\cdot 2\text{MeCN}$  and  $[\text{NMe}_4]_2[\text{Ni}(\text{C}_3\text{Se}_3)_2]$ , 3013–20

Mono- and di-nuclear nickel(II) complexes with Schiff bases derived from 4-substituted 2,6-diformylphenol and 7-amino-4-methyl-5-azahept-3-en-2-one; crystal and molecular structure of [4-chloro-2,6-bis(4-methyl-2-oxo-5,8-diazahexa-3,8-dienyl)phenolato-(3-)]dinickel(II) bromide hemihydrate, 3063–70

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- $[\text{W}(\text{CO})(\text{R}^1\text{C}_2\text{R}^2)(\text{S}_2\text{CNR}_2)_2]$  ( $\text{R}^1 = \text{R}^2 = \text{Ph}$  or  $\text{H}$ ,  $\text{R} = \text{Me}$  or  $\text{Et}$ ;  $\text{R}^1 = \text{R}^2 = \text{R} = \text{Me}$ ;  $\text{R}^1 = \text{Ph}$ ,  $\text{R}^2 = \text{H}$ ,  $\text{R} = \text{Et}$ ) with octacarbonyldicobalt. X-Ray crystal structure of  $[\text{WCo}_2(\mu\text{-S})(\mu\text{-SCNEt}_2)(\text{CO})_4(\text{C}_2\text{Ph}_2)(\text{S}_2\text{CNEt}_2)]$ , 567-72

- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 97. Synthesis and crystal structures of the molybdenumditungsten compounds  $[\text{MoW}_2(\mu\text{-}\sigma,\sigma':\eta^4\text{-C}(\text{Ph})\text{C}(\text{Ph})\text{C}(\text{C}_6\text{H}_4\text{Me-4})\text{C}(\text{C}_6\text{H}_4\text{Me-4}))(\text{CO})_6(\eta\text{-C}_5\text{H}_5)_2] \cdot 2\text{CH}_2\text{Cl}_2$  and  $[\text{MoW}_2(\mu\text{-C}_2\text{Ph}_2)(\mu\text{-C}_2(\text{C}_6\text{H}_4\text{Me-4}))(\text{CO})_6(\eta\text{-C}_5\text{H}_5)_2] \cdot 0.5\text{CH}_2\text{Cl}_2$ , 953-8

- Syntheses and structural characterizations of a series of Mo(W)-Cu-S compounds of bidentate dialkyldithiocarbamate ligands. Crystal structure of  $[\text{NEt}_4]_2[\text{Mo}_2\text{Cu}_2\text{S}_6\text{O}_2(\text{Me}_2\text{NCS}_2)_3]$ , 1023-6

- Synthesis and characterisation of binuclear and trinuclear organoimido complexes of tungsten(vi) and -(v) and a binuclear tungsten(v) oxoanion. X-Ray crystal structures of  $[\{\text{WCl}_4(\text{NEt}_2)_2\}_2]$ ,  $[\{\text{P}(\text{CH}_2\text{Ph})\text{Ph}\}_3][\text{W}_2\text{Cl}_2(\text{NR})_2]$  ( $\text{R} = \text{Et}$  or  $\text{Ph}$ ), and  $[\{\text{P}(\text{CH}_2\text{Ph})\text{Ph}\}_3][\text{W}_2\text{O}_2\text{Cl}_2]$ , 1043-52

- Conversion of a  $\mu_3$ -alkylidyne into a  $\mu_3$ -acyl group at a trimetal centre; X-ray crystal structures of the phosphido bridged complexes  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-H})(\mu\text{-PEt}_2)(\text{CO})_6(\text{PEt}_2\text{H})(\eta\text{-C}_5\text{H}_5)] \cdot \text{Et}_2\text{O}$ ,  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-PPh}_2)_2(\text{CO})_6(\eta\text{-C}_5\text{H}_5)] \cdot 0.5\text{CH}_2\text{Cl}_2$ ,  $[\text{WFe}_2(\mu_3\text{-OCCH}_2\text{R})(\mu\text{-PPh}_2)_2(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]$ , and  $[\text{WFe}_2(\mu\text{-OCCH}_2\text{R})(\mu\text{-PPh}_2)_2(\text{CO})_6(\text{PPh}_2\text{H})(\eta\text{-C}_5\text{H}_5)] \cdot \text{CH}_2\text{Cl}_2$  ( $\text{R} = \text{C}_6\text{H}_4\text{Me-4}$ ), 1063-76

- Organoimido complexes of tungsten(IV) containing  $\pi$ -olefin ligands. The X-ray crystal structure of dichloro(2-methylpropene)(phenylimido)bis(trimethylphosphine)tungsten(IV),  $[\text{WCl}_2(\text{NPh})(\text{Me}_2\text{C}=\text{CH}_2)(\text{PMe}_3)_2]$ , 1173-8

- Synthesis and reactions of co-ordinatively unsaturated  $\mu_3$ -alkylidyne clusters; X-ray crystal structures of the phosphido bridged complexes  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-H})(\mu\text{-PPh}_2)(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]$  and  $[\text{WFe}_2(\mu_3\text{-CR})(\mu\text{-C}(\text{O})\text{C}(\text{Me})\text{CHMe})(\mu\text{-PEt}_2)(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]$  ( $\text{R} = \text{C}_6\text{H}_4\text{Me-4}$ ), 1589-96

- Crystallographic characterization of the polyoxotungstate  $[\text{Eu}_3(\text{H}_2\text{O})_3(\text{SbW}_9\text{O}_{33})(\text{W}_6\text{O}_{18})_3]^{18-}$  and energy transfer in its crystalline lattices, 1687-96

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- Synthesis, reactivity, and electrochemistry of some new nitrides of molybdenum and tungsten: crystal structure of trinuclear  $[\{\mu\text{-Mo}(\text{N}_3)_2\}_3\{\text{NM}(\text{O})(\text{N}_3)(\text{Et}_2\text{PCH}_2\text{CH}_2\text{PEt}_2)_2\}_2]$ , 2013-20

- Reactions of the co-ordinatively unsaturated  $\mu_3$ -alkylidyne cluster  $[\text{WFe}_2(\mu_3\text{-CC}_6\text{H}_4\text{Me-4})(\mu\text{-H})(\mu\text{-PPh}_2)(\text{CO})_6(\eta\text{-C}_5\text{H}_5)]$  with  $\text{PMe}_2\text{Ph}$ , 2063-8

- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 98. Tri- and tetra-nuclear metal compounds with ethylidyne or *p*-tolylmethylidyne groups, and having both cyclopentadienyl and carbaborane ligands, 2239-46

- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 99. Synthesis of the cluster compounds  $[\text{MWCoAu}(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\mu_3\text{-CR})(\text{CO})_4(\eta\text{-C}_5\text{H}_5)(\eta\text{-C}_5\text{Me}_5)(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)]$  ( $\text{M} = \text{Mo}$  or  $\text{W}$ ,  $\text{R} = \text{C}_6\text{H}_4\text{Me-4}$ ;  $\text{M} = \text{W}$ ,  $\text{R} = \text{Me}$ ); crystal structure of the complex  $[\text{MoWCoAu}(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\mu_3\text{-CC}_6\text{H}_4\text{Me-4})(\text{CO})_4(\eta\text{-C}_5\text{H}_5)(\eta\text{-C}_5\text{Me}_5)(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)] \cdot \text{CH}_2\text{Cl}_2$ , 2247-52

- Chemistry of polynuclear metal complexes with bridging carbene or carbyne ligands. Part 100. Synthesis of mixed-metal compounds via the salts  $[\text{NEt}_4][\text{Rh}(\text{CO})\text{L}(\eta^5\text{-C}_5\text{B}_9\text{H}_9\text{R}_2)]$  ( $\text{L} = \text{PPh}_3$ ,  $\text{R} = \text{H}$ ;  $\text{L} = \text{CO}$ ,  $\text{R} = \text{Me}$ ); crystal structures of the complexes  $[\text{WRhAu}(\mu\text{-CC}_6\text{H}_4\text{Me-4})(\text{CO})_3(\text{PPh}_3)(\eta\text{-C}_5\text{H}_5)(\eta^5\text{-C}_2\text{B}_9\text{H}_9)]$  and  $[\text{WRhAu}_2(\mu_3\text{-CC}_6\text{H}_4\text{Me-4})(\text{CO})_6(\eta\text{-C}_5\text{H}_5)(\eta^5\text{-C}_2\text{B}_9\text{H}_9\text{Me}_2)] \cdot 0.5\text{CH}_2\text{Cl}_2$ , 2253-62

- New fluxional seven-co-ordinate molybdenum(II) and tungsten(II) complexes: X-ray structure of the pyridine-2-thionato complex  $[\text{W}(\text{C}_5\text{H}_4\text{NS})_2(\text{CO})_2(\text{PMe}_2\text{Ph})]$ , 2321-4

- Tungsten(vi) complexes as new products in the high-intensity photolysis of octacyanotungstate(v) ion in hydroxylic solvents; crystal structure of  $[\text{PPh}_4][\text{W}(\text{CN})_6\text{O}]\text{H}_2\text{O}$  and  $[\text{PPh}_4][\text{W}(\text{CN})_6\text{O}(\text{OMe})]$ , 2331-6

- Synthesis of dicarbonyl and halogeno complexes of ( $\eta$ -pentamethylcyclopentadienyl)(nitrosyl)-molybdenum and -tungsten. Crystal structure of  $[\{\text{Mo}(\eta^5\text{-C}_5\text{Me}_5)(\text{NO})(\text{Br})(\mu\text{-Br})_2\}_2]$ , 2445-50

- Protonation of bis[1,2-bis(diethylphosphino)ethane]bis(dinitrogen)-molybdenum and -tungsten with fluoroboric acid-diethyl ether (1/1) in benzene; crystal and molecular structure of bis[1,2-bis(diethylphosphino)ethane]fluoro[hydrazido(2-)]tungsten tetrafluoroborate, 2503-8

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Reactions of the complexes  $[W_2(CO)(NCMe)(\eta^2-RC_2R)_2]$  ( $R = Me$  or  $Ph$ ) with dithiocarbonates and related ligands, and the X-ray crystal structure of  $[W(CO)(S_2CNC_4H_9)(\eta^2-MeC_2Me)_2]$ , 2535–42

Chemistry of polynuclear metal complexes with bridging carbene or carbene ligands. Part 101. Synthesis of the compounds  $[WPt(\mu-CC_6H_4Me-4)(\mu-\sigma-\eta^2-C_2B_9H_{11}Me_2)(CO)_2(PMe_2Ph)_2]$  ( $x = 5, n = 9; x = 6, n = 10$ ); crystal structures of an isomer of each complex, 2617–24

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Photochemistry of some dinuclear molybdenum and tungsten cyclopentadienyl carbonyl complexes in frozen gas matrices at ca. 12 K: infrared spectroscopic evidence for carbon monoxide ejection as a primary photoprocess, 2825–32

Synthesis and spectroscopic properties of  $[AsPh_4][Mo(bipy)(CN)_2] \cdot 0.5bipy \cdot 2H_2O$  ( $M = Mo$  or  $W$ ); X-ray crystal structure of the tungsten complex, 2959–64

Reaction of polynuclear acetylidyne clusters, synthesis of pentanuclear heterometallic clusters by addition of  $[M(CO)_3(C\equiv CPh)(\eta-C_5H_5)]$  to  $[MoOs_3(CO)_{11}(C\equiv CPh)(\eta-C_5H_5)]$  ( $M = Mo$  or  $W$ ). Crystal structures of  $[Mo_2Os_3(CO)_{11}(CCPhCCPh)(\eta-C_5H_5)_2] \cdot 2H_2O$  and  $[MoWOs_3(CO)_{11}(\mu_4-C)(\mu_3-CPh)(CCPh)(\eta-C_5H_5)_2] \cdot CH_2Cl_2$ , 3025–32

Synthesis of the tetranuclear mixed-metal carbido clusters  $[WRu_3L(CO)_{11}(\mu_4-C)(\mu-H)]$  via methoxymethylidyne clusters  $[WRu_3L(CO)_{11}(\mu-COMe)]$  ( $L = \eta-C_5H_5$  or  $\eta-C_5Me_5$ ). Crystal structures of  $[WRu_3(\eta-C_5Me_5)(CO)_{11}(\mu_3-COMe)]$  and  $[WRu_3(\eta-C_5H_5)(CO)_{11}(\mu_4-C)(\mu-H)]$ , 3033–8

Synthesis of the cationic bis(but-2-ynyl) complex  $[W(CO)(NCMe)(S_2CNC_4H_9)(\eta^2-MeC_2Me)_2]BF_4$  and its reactions with neutral bidentate donor ligands ( $L-L$ ) to give  $[W(CO)(S_2CNC_4H_9)(L-L)(\eta^2-MeC_2Me)]BF_4$ ; X-ray crystal structure determination of  $[W(CO)(S_2CNC_4H_9)(Ph_2PCH_2PPh_2)(\eta^2-MeC_2Me)]BF_4$ , 3169–74

Weak charge-transfer polyoxoanion salts: the reaction of quinolin-8-ol (Hquin) with phosphotungstic acid and the crystal and molecular structure of  $[H_2quin]_3[PW_{12}O_{40}] \cdot 4EtOH \cdot 2H_2O$ , 3221–8

Octahedral alkylidyne complexes of tungsten with chelating ligands as precursors for polynuclear compounds. Crystal structures of  $[W(\equiv CR)(CO)_2(dmpe)(NCS)]$  and  $[Co_2W(\mu_3-CR)(CO)_6(dmpe)Br]$  ( $R = C_6H_4Me-4$ ,  $dmpe = Me_2PCH_2CH_2PMe_2$ ), 3355–62

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